Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently Amended) An optical pulse waveform converter, comprising:

~~a coupled plurality of optical elements comprising:~~

an optical pulse input port configured to receive an input optical pulse;

a nonlinear optical element configured to broaden a wavelength content of an optical pulse routed through said nonlinear optical element;

a dispersive optical element separate from said nonlinear optical element and configured to modify a temporal profile of an optical pulse routed through said dispersive optical element;

a wavelength selecting optical element configured to pass selected wavelength components of an optical pulse routed through said wavelength selecting optical element; and

an optical pulse output port configured to output an optical pulse comprising different optical characteristics than said input optical pulse, wherein

the non-linear optical element, the dispersive optical element, and the wavelength selecting optical element connect the optical pulse input port to the optical pulse output port, and

the non-linear optical element, the dispersive optical element, and the wavelength selecting optical element are directly connected to one another according to one of a plurality of predetermined arrangements.

2. (Currently Amended) The waveform converter of Claim 1, wherein said nonlinear element and said dispersion element comprise:

a plurality of optical fibers having different nonlinear coefficients; and

a plurality of optical fibers having different dispersion characteristics.

3. (Original) The waveform converter of Claim 2, wherein said optical fibers having different nonlinear coefficients are alternately disposed with said optical fibers having different dispersion characteristics.

4. (Original) The waveform converter of Claim 2, wherein said optical fibers differ in length.

5. (Currently Amended) The waveform converter of Claim 1, wherein said nonlinear element comprises:

a highly nonlinear optical fiber having a nonlinear coefficient of 5.0 $W^{-1}km^{-1}$ or larger.

6. (Currently Amended) The waveform converter of Claim 1, further comprising:

at least one optical amplifier.

7. (Original) The waveform converter of Claim 1, wherein said dispersive optical element and said wavelength selecting optical element are combined in a single optical medium.

8. (Currently Amended) The waveform converter of Claim 7, wherein said single optical medium comprises:

a chirped fiber Bragg grating.

9. (Original) The waveform converter of Claim 1, wherein said coupled optical elements are coupled in the order of input port, nonlinear optical element, dispersive optical element, wavelength selecting optical element, output port.

10. (Original) The waveform converter of Claim 1, wherein said coupled optical elements are coupled in the order of input port, dispersive optical element, nonlinear optical element, wavelength selecting optical element, output port.

11. (Currently Amended) The waveform converter of Claim 1, wherein said wavelength selecting element comprises:

a fiber grating.

12. (Currently Amended) The waveform converter of Claim 1, wherein said wavelength selecting element comprises:

a bandpass filter.

13. (Currently Amended) A device ~~for modifying~~configured to modify an optical signal having a pulse waveform, said device comprising:

~~an element~~means for exerting a nonlinear effect on said pulse waveform[[,]];

~~an element~~means for exerting a dispersion effect on said pulse waveform[[,]]; and

~~an element~~means for changing an optical spectrum profile of said pulse waveform, wherein

said means for exerting a nonlinear effect, means for exerting a dispersion effect, and said means for changing an optical spectrum profile are directly coupled in one of a plurality of predetermined arrangements.

14. (Currently Amended) An optical pulse waveform converter, comprising:

a plurality of directly coupled nonlinear elements ~~for exerting~~configured to exert a nonlinear effect on an optical pulse; and

a plurality of chirped fiber grating elements directly coupled to said plurality of directly coupled non-linear elements ~~for exerting~~ and configured to exert a dispersion effect on said optical pulse and ~~for modifying~~configured to modify an optical spectrum profile of an optical pulse.

15. (Currently Amended) The optical pulse waveform converter of Claim 14, further comprising:

a first optical circulator coupled to each of a first of said nonlinear elements, a first of said chirped fiber gratings, and a second of said nonlinear elements[[,]]; and

a second optical circulator coupled to each of said second nonlinear element, and a second of said chirped fiber gratings.

16. (Currently Amended) An optical pulse waveform converter, comprising:

a plurality of nonlinear elements and a plurality of dispersion elements directly coupled in an alternating series; and

a wavelength selecting element directly coupled to an output of said alternating series.

17. (Currently Amended) The optical pulse waveform converter of Claim 16, wherein said alternating series of nonlinear elements and dispersion elements comprise:

coupled optical fiber segments.

18. (Original) The optical pulse waveform converter of Claim 17, wherein said optical fiber segments become progressively shorter from an input end to an output end of said alternating series.

19 (Currently Amended) A method ~~for~~ of converting an optical pulse waveform, said method comprising:

broadening ~~the~~ a wavelength content of an input optical pulse with a first device and narrowing the temporal width of ~~an~~ said input optical pulse with a second device directly connected to said first device to produce a modified optical pulse; and

selecting a portion of the wavelength content of said modified optical pulse to produce an output optical pulse.

20. (Original) The method of Claim 19, wherein said broadening is performed prior to said narrowing.

21. (Original) The method of Claim 19, wherein said narrowing is performed prior to said broadening.

22. (Currently Amended) The method of Claim 19 wherein said step of broadening ~~is performed by~~ comprises:

routing said input optical pulse through a nonlinear optical medium.

23. (Currently Amended) The method of Claim 19, wherein said step of narrowing ~~is performed by~~comprises:

routing said input optical pulse through a dispersive optical medium.

24. (Currently Amended) An optical pulse light source, comprising:

a modulated signal light source having output pulses characterized by a temporal waveform and a wavelength content; and

a waveform converter coupled to receive said output pulses from said signal light source and ~~comprising~~ including

a nonlinear optical element,

a dispersive optical element separate from said nonlinear optical element, and

a wavelength selecting optical element, wherein

said waveform converter is configured to output optical pulses which have different wavelength content than said optical pulses output from said signal light source, and

the non-linear optical element, the dispersive optical element, and the wavelength selecting optical element are directly connected to one another according to one of a plurality of predetermined arrangements.

25. (Original) The light source of Claim 24, wherein said output optical pulses from said waveform converter have a center wavelength closer to 1550 nm than the center wavelength of said modulated signal light source output pulses.

26. (Currently Amended) A device ~~for producing~~configured to produce a optical pulses for optical amplification and communication, said device comprising:

a laser configured to produce~~producing a modulated producing~~ a modulated light signal output; and

a waveform converter having said light signal output as an input, said waveform converter ~~comprising~~including:

a nonlinear optical element configured to broaden a wavelength content of an optical pulse routed through said nonlinear optical element;

a dispersive optical element configured to modify a temporal profile of an optical pulse routed through said dispersive optical element; and

a wavelength selecting optical element configured to pass selected wavelength components of an optical pulse routed through said wavelength selecting optical element, wherein

the non-linear optical element, the dispersive optical element, and the wavelength selecting optical element are directly connected to one another according to one of a plurality of predetermined arrangements.

27. (Currently Amended) A method of changing the wavelength content of a first optical pulse, wherein said first optical pulse has an optical spectrum centered at a first wavelength, said method comprising:

sequentially spreading a wavelength profile and a temporal profile of the optical spectrum of said first optical pulse in two separate and directly connected optical devices to produce a spread optical spectrum[[,]];

selecting with a third optical device directly connected to said two separate and directly connected optical devices a second wavelength from said spread optical spectrum[[,]]; and

filtering wavelengths outside of a selected wavelength band around said second wavelength band so as to produce a second optical pulse having an optical spectrum centered approximately at said second wavelength.

AMENDMENTS TO THE DRAWINGS

The attached sheets of drawings include changes to Figures 3A and 5, by adding word "TIME" for Fig. 3A, and change reference number "500" to "50" for Fig. 5.

Attachments: Replacement Sheets (2)